

### ABSTRACT (new)

A magnetic torque transducer for a structure such as a disc through which torque is transmitted between a central shaft to which the disc is mounted and an outer periphery such as a gear wheel. The intervening region through which torque is transmitted is magnetised to provide a transducer element having two magnetised, annular regions which cooperate to emanate a magnetic field that is torque-dependent. The two magnetised regions may be longitudinally-magnetised through the disc or circumferentially magnetised with opposite polarities. A sensor assembly of non-contacting sensors is used to detect the emanated field and connected in circuitry to provide a torque-dependent signal. In an alternative a single magnetised annular region is employed. The annular region or regions need not be a complete annulus. The same disc-like structure can also be used as a force sensor for measuring bending moments or other forces which result in stress occurring in the disc.